

[Home](#) >> [Special Education](#)[Advanced Search](#)

About Special Education
Advisory Panels
Compliance
Data Coordination
Effective Practices
First Steps (Birth to 3)
Monthly Webstream
Program Monitoring & Improvement Planning
Sheltered Workshops
Spec. Ed. Listservs (SELs)
SPP/APR
Special Education Finance
Laws and Regulations
MSB/MSD/MSSD
Three-Tiered Models (RTI)
Parents
Teachers
DESE Web Applications

Missouri Blindness Literacy Study 1999

**Presented to the Missouri Legislature
by the Department of Elementary and Secondary Education**

Report Prepared by
Project Director: Dr. Chris Craig
Associate Director: Dr. David Hough
Research Assistants:
Ms. Vicki Schmitt
Mr. Calvin Churchwell
Mr. Jeremiah Boatright
Ms. Amanda Miller
Ms. Jennifer Aug
Ms. Kristi Rowe
Southwest Missouri State University
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Tables of Contents

Executive Summary	1
Participants in the Study	1
General Conclusions	1
Academic Literacy	1
Graduation Rates	2
Direct and Consultative Visually Impaired (VI) Services	2
Transition Services	2
Student Characteristics	2



Description of Current Status of Literacy/National Issues	3
Findings of the 1997 and 1998 Literacy Studies	3
Purpose of the Present Study	4
Procedures and Methodology	4
Findings	5
Eligible SVI by Age and Grade	5
Visual Status and Additional Disabilities	6
Learning Media	7
Assistive Technology	8
Educational Placements and Graduation Rates	8
VI Personnel and Services	9
Emergent, Functional and Academic Literacy	9
Policy Implications	13
Recommendations for Future Studies	14
References	15
Appendix A Telephone Interview Protocol	16
Appendix B Blindness Literacy Survey	20

Tables

Table 1. Eligible Students by Age	5
Table 2. Eligible Students by Grade	6
Table 3. Visual Status of Students Included in the Study	6
Table 4. Eligible Students by Additional Disability	7
Table 5. Eligible Students by Type of Literacy Media Used	7
Table 6. Eligible Students Who Use Slate and Stylus and/or other Devices in Writing Braille	8
Table 7. Eligible Students by Placement	8
Table 8. State Graduation Rates for Eligible Students in Academic Programs MSB	9
Table 9. Personnel with Certification in Blind and Partially Sighted Providing Services to SVI	9
Table 10. Grade Level Performance Items for Print and Braille Readers	10
Table 11. Missouri Assessment Program (MAP) 1999 Scores for Math	11
Table 12. Missouri Assessment Program (MAP) 1999 Scores for Communication Arts	11
Table 13. Missouri Assessment Program (MAP) 1999 Scores for Social Studies	11

Table 14. Missouri Assessment Program (MAP) 1999 Scores for Science	12
Table 15. Estimated Braille Reading Rates	12

Executive Summary

The 1999 Blindness Literacy Study was commissioned by the Missouri Department of Elementary and Secondary Education (DESE) and conducted by a team of researchers at Southwest Missouri State University (SMSU). Highlights of the findings, conducted as mandated by Section 162.1136, RS MO have been provided in brief bulleted form. Readers interested in a more detailed analysis of the data collected are encouraged to refer to the full report which illustrates the findings in tabular form with accompanying narrative. The SMSU researchers included an out-of-state external review by a nationally recognized expert in the area of literacy for students with visual impairments (SVI). This input, along with the perspectives of colleagues from around the state, are reflected in this report.

Participants in the Study

- ▶ The Missouri School for the Blind (MSB), 145 school districts, and 2 centers [Children's Center for the Visually Impaired (CCVI), Delta Gamma of St. Louis] completed literacy profiles on SVI ages birth to 21.
- ▶ A total of 700 Blindness Literacy Surveys (See Appendix B) were returned. Twenty-eight profiles were not included in the analysis due to late returns and incomplete data, (n = 672).

General Conclusions

- ▶ The findings of the 1999 Blindness Literacy Study, mandated by Section 162.1136, RS Mo suggest the need to focus on the academic literacy needs of all SVI, not just those who are legally blind.
- ▶ Available data on Missouri Assessment Program (MAP) scores indicate that students who are partially sighted using print media scored lower than the average for all students without disabilities.
- ▶ These findings reflect a national discussion or concern related to the academic performance of SVI with low vision (Holbrook & Koenig, 1992; Ryles, 1996).
- ▶ Data indicate increased use of auditory sources such as tapes and text to speech systems among middle school and high school SVI.
- ▶ A learning media assessment (LMA) conducted as part of a transition plan could provide parents and educators of SVI with useful information on the stability and appropriateness of the chosen literacy medium.
- ▶ Data suggest that teachers working with SVI do not have a common language when discussing or reporting information regarding the use of assistive technology (AT).
- ▶ The concept of an AT evaluation and how this process relates to other diagnostic teaching procedures such as the LMA was not apparent from the

student profiles.

- ▶ Future studies should rely upon more direct assessment of the reading achievement of SVI. This approach would provide more accurate data on the status of literacy among this population in Missouri.

Academic Literacy

- ▶ Seventy-seven percent of all SVI who were identified as using print, Braille, and/or auditory media were reported to be reading at or above grade level.
- ▶ Of the 97 profiles of Braille readers providing complete data on grade placement and achievement in reading, 58 (60%) were reported to be functioning at or above grade level.
- ▶ Of the 127 students who were reported as Braille readers, 57 (45%) were reported to perform grade level activities interpreting charts, graphs, and maps.
- ▶ A total of 73 Braille readers were reported to have no additional disabilities. Of these, 54 (74%) were functioning at or above grade level.
- ▶ Higher estimated Braille reading rates were evidenced among students in grades 4-6.
- ▶ Among the 324 students reported to be print readers (large print and regular print), 188 (58%) were reported to be reading at or above grade level.
- ▶ No statistically significant differences were found in the reported reading levels of SVI who used print, Braille, or print and Braille.
- ▶ An analysis of MAP scores revealed a disproportionate number of students who were partially sighted achieving at the lower two levels when compared to the general population.

Graduation Rates

- ▶ Graduation rates for the general population of students compared to SVI for academic years '97, '98, '99 are as follows: 75% to 65%, 76% to 48%, and 78% to 58%, respectively.

Direct and Consultative Visually Impaired (VI) Services

- ▶ Of the 672 profiles, 635 provided complete data on the amount of direct services provided. Of those, 301 students (47%) were reported to be receiving some level of direct services from a certified VI teacher.
- ▶ Of the 635 profiles, 334 (53%) of the students were reported to be receiving some level of VI consultation.
- ▶ Students residing in towns of (3,000-20,000 population) were described in literacy profiles as receiving significantly fewer direct and consultation VI services than students residing in rural areas or cities.

Transition Services

- ▶ Of the 196 SVI ages 14 and older, 181 (92%), were reported to have transition plans.
- ▶ A total of 135 students were reported to have been referred to Rehabilitation Services for the Blind (RSB).
- ▶ A total of 61 students were reported to be receiving RSB transition planning

services.

Student Characteristics

- ▶ Of the 672 profiles included in the analysis, 654 (97%) provided information on the visual status of SVI (data missing from 18 cases). Of these, 219 profiles (33%) reported visual acuities falling within the range of partially sighted, and 435 profiles (67%) reported visual acuities and field restrictions which meet the definition of legally blind.
- ▶ Two hundred fifteen (32%) of SVI who were also identified as having mental retardation were reported to be receiving extensive or pervasive support (severe to profound).
- ▶ One hundred twenty seven students used Braille in combination with other literacy media.
- ▶ A total of 220 students were reported to use large print with other literacy media.
- ▶ Two hundred twenty-eight (228) students profiled used regular print in combination with other literacy media.
- ▶ Two hundred nineteen (219) students were reported to use auditory sources, which include tapes and text to speech systems.
- ▶ A total of 118 Braille readers were legally blind and four were classified as partially sighted.

Description of Current Status of Literacy/National Issues

Causes of illiteracy among SVI cannot be directly attributed to the general problems of literacy in the United States. Still, concerns of parents and educators over the lack of use of Braille and the level of literacy enjoyed by individuals with low vision who use print have been sensitized by our society's concerns in this area. The professionals who educate SVI are presently engaged in a discussion on a national level regarding appropriate levels of literacy for this population.

Craig (1996) conducted a national study on the role of families in the emerging literacy of children with VI. The study found that parents of prospective Braille readers had different expectations concerning their children's ability to read and write and reported fewer home literacy experiences such as pretend reading, examining tactal books, and scribbling when compared to prospective print readers. The study also found that families of SVI with additional disabilities ranked learning to read and write lower than goals such as communicating effectively, making friends, and self-care skills. Ryles (1996) conducted a study of how use of various literacy media impacts post-secondary outcomes. Results indicated that SVI who learned to read using Braille had higher employment rates and educational levels, were more financially self-sufficient, and spent more time reading than did those who learned to read using print.

The American Printing House for the Blind (APH) Annual Report (1998) provides a profile of students who were legally blind in terms of their primary reading medium. Data gleaned from these reports have been used to support the position that Braille has not been fully utilized by this population and documents the concern that nearly one-third of all students in the APH Registry are classified as non-readers. Among the 57,425 students registered as of January 1998, 14,461 were visual readers, 5,461 were Braille readers, 4,051 were auditory readers, 14,924 were pre-readers, and 18,528 were non-readers.

Findings of the 1997 and 1998 Literacy Studies

The 1997 census survey results were collected from the APH Registry. These data indicate that 84 percent of the students registered who were Braille readers were at grade level and utilized textbooks at their grade level, (or no more than one grade level below). The remaining 16 percent of students were not more than two grade levels below their grade level.

In response to House Bill 1088, the Missouri School for the Blind (MSB) conducted the 1998 Census of Blind and Partially Sighted School-Age Children in Missouri. The instrument used in that study was streamlined from the instrument used to conduct the Annual APH Federal Quota registration in Missouri but included additional survey items to collect data on the achievement by grade level in the area of literacy. The 1998 census sought to complete the following tasks: 1) Track the educational progress of students specifically related to literacy and academic achievement; 2) Identify the number of blind and partially sighted children served by the 524 Missouri school districts, and at the Missouri School for the Blind; 3) Determine what reading medium was being used and at what grade level each identified child was performing; 4) Determine future employment options projected for each student; 5) Collapse, compare, and streamline annual census data collected under the auspices of House Bill 1088 with the data submitted annually by districts for both the APH registration and the federally mandated child count under the Individuals with Disabilities Education Act (IDEA). While the term "literacy" has multiple meanings, the term was defined for this census as "reading and writing" in the chosen medium.

A total of 668 survey questionnaires were returned from 87 school districts in the 1998 census. A total of 564 unduplicated questionnaires were returned from local education agencies and 104 reports were returned from MSB. All respondents reported that their students had current diagnostic summaries, which reflected reading achievement as measured by a variety of instruments. Of the 377 students reported as readers, 234 were reported to be legally blind and the remaining 133 reported to be partially sighted. Of the total number of respondents, 110 used regular print, 65 used regular print with assistance, 120 used large type, 82 used Braille, 10 were classified as auditory readers, 66 were classified as pre-readers, and 193 were classified as non-readers. Eighty of the 234 students were reported to be Braille readers, and one partially sighted student was reported to use Braille. Interpretation of these data collected and reported in the 1998 Census indicated that of the 234 students classified as legally blind, 95 (41%) were reading at grade level and 21 (9%) were functioning above grade level in the area of reading achievement.

Purpose of the Present Study

The purpose of the Missouri Blindness Literacy Study 1999 was to investigate the literacy level of all children with corrected visual acuities in the better eye and/or field restrictions falling within the Missouri State Eligibility criteria for Visually Impaired. This report is to be delivered by the Department of Elementary and Secondary Education (DESE) to the Governor and the state legislature by December 1st of each year, per Section 162.1136, RS Mo.

The present study focuses on data collected primarily from educators working with SVI. The data include information on grade level performance in reading, estimated Braille reading rates, use of assistive technology, instruments for evaluation of literacy and the amount of direct and consultation services provided to SVI. These data have been used to develop policy implications and recommendations for future inquiries involving SVI.

Procedures and Methodology

The use of telephone interviews was employed to augment DESE Core Data (See Appendix A, Telephone Interview Protocol). Permission from the Texas School for the Blind was

obtained to utilize components of an instrument designed to provide profiles on the literacy of SVI in Texas (See Appendix B, Blindness Literacy Survey).

In addition to the DESE core data, which provide information on Missouri programs serving SVI, a list of contacts was provided by MSB derived from the APH Annual Federal Quota Registration completed in January of each year. The APH Federal Quota registration process provides a much broader accounting of professionals currently working with SVI in Missouri.

Based on the two data sources (DESE and MSB), telephone interviews were conducted in order to obtain a more discreet accounting of the actual number of SVI served by Missouri programs. Blindness Literacy Surveys were then sent to each district or center to be completed on all SVI.

After cross-referencing the list of professional contacts verified through telephone interviews with the current list of directors and coordinators of special education programs in Missouri, a second mailing was sent to all school districts not included in the original mailing. The second mailing did not include private, parochial, or home school students.

Data provided by DESE on the performance of students coded as partially sighted on the Missouri Assessment Program (MAP) were analyzed, and comparisons made with the general population. In addition, DESE Core Data have been organized and presented which display graduate rates of this population for the past three years.

Findings

A total of 145 Missouri school districts and 2 centers serving SVI contributed data to this study by telephone protocol and/or through the completion of the mailed survey instruments. Of these, 37 participated only by telephone interview, while the remaining 110 responded to the mailed survey instruments, or both. Information was provided by 55 teachers from the DESE Core Data list who were certified/provisionally certified to work with SVI. The remaining data were collected from individuals from the contact list provided by MSB.

Eighty-six (86) comprehensive telephone interviews were conducted, and 672 survey questionnaires were completed and returned by professionals currently working with SVI in Missouri.

Numbers representing eligible students by age (Table 1), by grade (Table 2), and by placement (Table 7), were extracted from both telephone interviews and written surveys. Professionals who provided data through the mailed survey instruments were instructed to address only those items appropriate for their student(s).

Of the 672 profiles, 650 provided information on gender. A total of 264 (41%) females and 386 (59%) males were included in the analysis. Geographically, there were 80 (12%), 106 (16%), and 391 (58%) students coded as receiving services in rural (0-3000 population), towns (3000-20,000 population), and cities (greater than 20,000 population) respectively. A total of 95 (14%) profiles were completed on students at MSB.

Eligible SVI by Age and Grade

According to the December 1, 1998 child count, 392 students were reported to meet Missouri's eligibility criteria for visually impaired. Table 1 displays the number of eligible SVI by age, and Table 2 displays the number of eligible SVI by grade according to survey results.

Table 1. Eligible Students by Age

Age	Public Schools	Missouri School for the Blind	*Private/Parochial/Home School
0-2	12	0	107
3-5	95	1	24
5-9	123	8	1
10-14	164	36	4
15-18	96	41	--
19-21	7	8	--
Totals	497	**94	136

* Data include results of both telephone and mailed surveys. The total also includes 89 students from Delta Gamma.

**(one missing case)

Table 2. Eligible Students by Grade

Grade	Public Schools	Missouri School for the Blind	*Private/Parochial/Home School
Pre K	90	0	131
K-3	105	6	--
4-6	81	5	1

7-12	140	28	4
Ungraded	102	50	--
Totals	518	**89	136

* Data include results of both telephone and mailed surveys. Totals include 89 students from Delta Gamma.

**(six missing cases)

Visual Status and Additional Disabilities

Table 3 presents information on the visual status of students included in the study. An analysis of Table 3 reveals 219 students with visual acuities falling within the range of partially sighted (visual acuity = 20/70 to 20/100 + 20/100 to 20/200), and 435 with visual acuities and/or field restrictions meeting the definition of legally blind (20/200 or higher).

Table 3. Visual Status of Students Included in the Study*

Visual Acuity	#	%	Visual Field Loss	#	%
20/70 to 20/100	83	14.7%	No Field Loss	229	49.2%
20/100 to 20/200	136	24.1%	Partial Restriction	145	31.2%
20/200 to 20/400	151	26.8%	Severe Restriction	91	19.5%
20/400 or Worse	70	12.4%			
Totally Blind	123	21.8%			

Note: Percentages may not total 100% due to rounding.

*Data provided by the Blindness Literacy Survey.

Among the SVI identified as mentally retarded, results from the Blindness Literacy Survey indicate 214 (32%) were reported to need extensive or pervasive services. Table 4 displays the number of students reported to have additional disabilities.

Table 4. Eligible Students by Additional Disability*

Disability	Public Schools	Missouri School for the Blind	**Private/Parochial/ Home School	Total
SVI only	182	25	--	207
SVI/Deaf-Hearing Impairment	19	1	0	20
SVI/Physically Impaired/Other Health Impaired	192	30	5	227
SVI/Mental Retardation	186	54	21	261
SVI/Autism	19	2	4	25
SVI/Behavior Disorder	17	1	3	21
SVI/Learning Disability	66	5	0	71
SVI/Speech and Language	183	42	11	236
SVI/Traumatic Brain Injury	18	3	4	25

Numbers may represent replicated counts (i.e., students could be placed in one or more category).

*Data provided by the Blindness Literacy Survey.

**Private / Parochial / Home School totals include students from Delta Gamma and CCVI.

Learning Media

Based on survey results, a total of 118 students classified as legally blind and 4 students classified as partially sighted were reported to be Braille readers.

Table 5 displays the number of students reported to use various literacy media. Data on auditory sources are broad and include the use of audiocassettes and text to speech systems. These data, however, do not reflect the primary literacy medium used by SVI.

Table 5. Eligible Students by Type of Literacy Media Used*

Grade	Total
	#
Pre K	22
K-3	29
4-6	23
7-12	43
Ung.	10
Totals	127

Grade	Braille Readers	Braille-Reading
Receiving		
Not Receiving		

	Instruction		Instruction	
	#	%	#	%
Pre K	21	99%	1	1%
K-3	28	99%	1	1%
4-6	20	87%	3	13%
7-12	38	88%	5	12%
Ung.	10	100%	0	00%
Totals	117		10	

Grade	Large Print		Standard Print		Auditory Sources	
	#	%	#	%	#	%
Pre K	15	7%	10	4%	8	4%
K-3	40	18%	48	21%	37	17%
4-6	40	18%	47	21%	33	15%
7-12	89	40%	96	42%	105	48%
Ung.	36	16%	27	12%	36	16%

Totals	220	228	219	
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*Data provided by the Blindness Literacy Survey.

A review of Table 6 suggests limited use of the slate and stylus by students attending Missouri schools in each of the settings listed.

Table 6. Eligible Students Who Use Slate and Stylus and /or other Devices in Writing Braille (including public, MSB, private/parochial/home school)*

Grade	# of Students Using Slate and Stylus	# of Students Using Laptops	# of Students Using Portable Electronic Notetakers
Pre K	0	0	0
K-3	8	0	0
4-6	13	0	11
7-12	16	6	13
Ungraded	0	1	0

***Data provided from Telephone Interviews Protocols and the Blindness Literacy Survey.**

Assistive Technology

Of the 672 SVI profiles, 607 (90%) provided data on the practice of assistive technology (AT) evaluations. Of these, 209, (34%), indicated that an AT evaluation had been conducted. Responses relative to the number of AT evaluations and the provision of AT devices such as slate and stylus or portable electronic note takers were inconsistent with one another. While 209 students were reported to have received an AT evaluation, 298 students were reported to have been provided AT devices based on these evaluations. This uneven response may indicate different interpretations of what is an AT device or service and what constitutes an AT evaluation.

Educational Placements and Graduation Rates

Table 7 displays the educational placements reported for SVI in Missouri, including those attending the State Schools for the Severely Handicapped. An examination of this table

reveals that 202 SVI spent 85% to 100% of their time in the regular education classroom.

Table 7. Eligible Students by Placement

Placement	Public Schools	Missouri School For the Blind	*Private/Parochial/Home School
Regular Ed. Classroom (5)	202	--	5
Resource Classroom (6)	51	--	--
Self-Contained Classroom (7)	118	--	--
Separate Educational Facility (including residential)	--	172**	136***

*Data include results of both telephone and written surveys.

**Includes 77 SVI from State Schools for the Severely Handicapped.

***Includes students from Delta Gamma and CCVI.

Table 8 displays the graduation rates of SVI, as compared to the general student population. An examination of Table 8 reveals that the largest discrepancy between graduation rates of students with visual impairments and those without disabilities occurred during the 1997-1998 school year with a difference of 27.9%, (76.35% - 48.4%).

Table 8. State Graduation Rates for Eligible Students in Academic Programs (including public, MSB, Private/parochial/home School)*

School Year	Non-Disabled	Visually Impaired Graduating

	# Grad.	%	# Grad.	%
1996- 1997	--	75.25%	11	64.7%
1997- 1998	--	76.35%	15	48.4%
1998- 1999	--	77.60%	40	57.9%

*Data provided by the DESE Core Data

VI Personnel and Services

Table 9 displays information on where certified VI personnel are providing services to SVI in Missouri. An examination of Table 9 reveals very few teachers with blind and partially sighted certification reported to be working in private/parochial/home school settings.

Table 9. Personnel with Certification in Blind and Partially Sighted Providing Services to SVI *

Entity	# of Teachers
Public Schools	71
Missouri School for the Blind	21
Private/Parochial/Home School	7
Rehabilitation Services for the Blind	0

*Data provided by DESE Core Data

Of the 672 profiles, 635 (94%) addressed level of VI services. Of these, 301 students (47%) were reported as receiving some level of direct VI services. With respect to VI consultation, only 334 (53%) of the students were reported as receiving some level of VI consultation.

A relationship between amount of VI services and reading performance could not be determined based on the data collected. No significant differences were found in reading performance among those students receiving VI services in rural, town, and city regions of the state. A further analysis revealed that SVI living in towns received significantly fewer direct and consultation VI services than the other two geographic areas.

Emergent, Functional and Academic Literacy

Emergent literacy has been defined as a process consisting of a series of happenings, which produces gradual changes in the reading and writing development of young children (Smith, 1989). There were 490 responses to the survey question pertaining to emergent literacy, 373 (76%), indicated their students exhibited emergent literacy skills (orientation to books, letters have sounds, etc.).

Functional literacy involves skills in negotiating one's daily life and emphasizes the variety of ways that reading and writing are used to achieve specific goals (Walters, Daniell, & Trechsel, 1987). A total of 511 profiles included data on the ability of SVI to write their own signature. Of these, 292 (57%) SVI were reported to have this functional literacy skill.

Academic literacy refers to the reading and writing skills one develops through the education process (Sticht 1990). Overall, 77% of all SVI who were identified as using print, Braille, and/or auditory media were reported to be reading at or above grade level. Of the 672 profiles, 497 provided information regarding academic literacy skills. Of those, 301 (61%) reported that their students display academic literacy skills (i.e., recognizes words, reads simple sentences, reads books written for young children).

As illustrated in Table 10, of the four survey items pertaining to grade level performance (interpreting charts and graphs, reading, writing, and listening comprehension), SVI were reported to score higher in listening comprehension. Among Braille readers (127), only 57 (44%) were reported to perform grade level activities in interpreting charts, maps, and graphs.

Table 10. Grade Level Performance Items for Print and Braille Readers*

Survey response to grade Level	Reading Activities	Comprehension Questions (about a story read aloud)	Interpreting Charts, Graphs, and Maps	Writing Activities
Yes	44%	62%	44%	43%
No	56%	38%	56%	57%

*Data provided from the Blindness Literacy Survey.

Of the 324 students reported to be print readers, 188 (58%) were reported to be reading at or above grade level. An analysis of the MAP scores for students coded as partially sighted reveals relatively low scores when compared to the general population.

Tables 11-14 display MAP Scores for both students coded as partially sighted and students without visual impairments in the areas of Mathematics, Communication Arts, Social Studies and Science, respectively, for 1998-99 school year. To determine the degree to

which these two groups differ, "Step 1" was added to "Progressing" to identify percentages of underachieving students. Table 11 displays these data. Analysis of Table 11 reveals that more SVI consistently scored at these lower levels when compared to students who are not visually impaired. This is true in all areas except fourth grade social studies, in which case, students' scores without visual impairments were 2.6% greater at these bottom two levels of measurement. In every other area and at every other grade level, SVI consistently do not score as high as students without visual impairments.

An analysis of MAP performance will be important for future studies, as it will provide a relatively stable measure through which comparisons of SVI and the general school-age population can be made. DESE provided data only on students coded as partially sighted and information on accommodations made for these students was unavailable.

Table 11. Missouri Assessment Program (MAP) 1999 Scores for Math

**(Students with a Disability Diagnosis of
Partially Sighted (PS) and Regular Education
Students)**

Achievement Level	4 th grade Reg. Ed.	4 th grade PS	8 th grade Reg. Ed.	8 th grade PS	10 th grade Reg. Ed.	10 th grade PS
Advanced	6.4%	3.1%	0.6%	0.0%	0.5%	0.0%
Proficient	28.9%	21.9%	9.7%	0.0%	9.2%	7.7%
Nearing Proficient	42.6%	31.3%	29.1%	5.3%	28.4%	15.4%
Progressing	18.9%	28.1%	38.1%	31.6%	34.4%	53.8%
Step 1	3.2%	13.6%	22.4%	63.2%	27.5%	23.1%
Total # Students	68,404	32	67,220	19	59,439	13

Table 12. Missouri Assessment Program (MAP) 1999 Scores for Communication Arts

(Students with a Disability Diagnosis of Partially Sighted (PS) and Regular Education Students)

--	--	--	--	--	--	--

Achievement Level	3rd grade Reg. Ed.	3rd grade PS	7 th grade Reg. Ed.	7 th grade PS	11 th grade Reg. Ed.	11 th grade PS
Advanced	1.2%	0.0%	2.4%	0.0%	1.3%	0.0%
Proficient	27.7%	14.3%	28.1%	22.2%	22.3%	7.1%
Nearing Proficient	39.3%	38.1%	30.6%	11.1%	38.1%	28.6%
Progressing	22.4%	28.6%	22.1%	33.3%	18.5%	21.4%
Step 1	9.4%	19.0%	16.7%	33.3%	19.8%	42.9%
Total # Students	68,726	21	67,216	18	49,582	14

Table 13. Missouri Assessment Program (MAP) 1999 Scores for Social Studies

(Students with a Disability Diagnosis of Partially Sighted (PS) and Regular Education Students)

Achievement Level	4 th grade Reg. Ed.	4 th grade PS	8 th grade Reg. Ed.	8 th grade PS	11 th grade Reg. Ed.	11 th grade PS
Advanced	5.4%	10.0%	8.7%	0.0%	4.0%	0.0%
Proficient	20.6%	20.0%	27.7%	11.8%	10.0%	7.1%
Nearing Proficient	36.4%	35.0%	28.9%	29.4%	40.3%	21.4%
Progressing	27.2%	30.0%	15.9%	0.0%	20.4%	21.4%

Step 1	10.4%	5.0%	18.8%	58.8%	25.3%	50.0%
Total # Students	52,902	25	51,732	17	38,475	14

**Table 14. Missouri Assessment Program (MAP) 1999 Scores for Science
(Students with a Disability Diagnosis of Partially Sighted (PS) and Regular Education Students)**

Achievement Level	3rd grade Reg. Ed.	3rd grade PS	7 th grade Reg. Ed.	7 th grade PS	10 th grade Reg. Ed.	10 th grade PS
Advanced	3.7%	0.0%	1.9%	0.0%	0.5%	0.0%
Proficient	31.0%	16.7%	12.6%	11.1%	4.0%	0.0%
Nearing Proficient	43.8%	37.5%	25.6%	22.2%	42.5%	25.0%
Progressing	16.0%	29.2%	38.9%	11.1%	37.2%	66.7%
Step 1	5.5%	16.7%	21.0%	55.6%	15.8%	8.3%
Total # Student	69,194	25	67,555	18	59,012	12

As reflected in Table 5, there are a total of 127 SVI identified as Braille readers. Complete data on grade placement and achievement in reading were provided for 97 of these students. This number reflects Braille readers with and without additional disabilities. Only 3 of the Braille readers identified as having mental retardation were reported to require extensive or pervasive services. Of the 97, 58 (60%) were reported to be functioning at or above grade level.

A closer analysis of SVI reported to be Braille readers revealed a total of 73 students having no additional disability. Of these, 54, (74%), were reported to be performing at or above grade level.

Table 15 displays the estimated reading rates of Braille readers by grade level as measured

by Blindness Literacy Survey item A-3 under academics (see appendix B). The average reading rate for Braille readers has been reported to be approximately 100 words per minute (Mangold& Mangold, 1989). As shown in Table 15, 14% of the Braille readers are reported as reading at or above the average Braille reading rate. Data indicate that higher reading rates were evidenced among students in grades 4-6.

Table 15. Estimated Braille Reading Rates*

Grade	Less than 60 wpm	61-90 wpm	91-120 wpm	121-200 wpm	More than 200 wpm
Pre-K	100%	0	0	0	0
K-3	83%	4%	9%	4%	0
4-6	37%	37%	21%	5%	0
7-12	45%	40%	5%	7.5%	2.5%
Ung.	80%	20%	0	0	0

*Data provided from the Blindness Literacy Study.

Policy Implications

- ▶ VI teachers in Missouri must be supported both at the state and regional levels to acquire preservice and professional development training in the use of the LMA. This training would enable VI teachers to make data based decisions on the most appropriate literacy media for their students.
- ▶ Due to the potential instability of the chosen literacy medium over time, as evidenced by the increased use of auditory sources beginning with middle school (See Table 5), and the need for accurate data on reading rates and efficiency of high school students (See Table 15), the LMA process is essential when developing appropriate and meaningful transition plans.
- ▶ Pre-service and professional development training for VI teachers must also emphasize competencies in the use of assistive technology (AT) and how to evaluate the AT needs of SVI.
- ▶ MAP data on SVI must be updated to reflect the performance of students who use Braille. Professionals responsible for the management of these data must work closely with those individuals charged with conducting future literacy studies to provide accurate information on the performance of both students with partial vision and those who are blind.
- ▶ Thirty-two percent of the profiles included in the study represent children

with significant disabilities. These results mirror national data reported by APH and other national studies (Craig, 1996). Pre-service teacher education in the area of visual impairment should increase the focus on the needs of students with multiple disabilities. The unique literacy needs of this population should be examined within a framework of augmentative and alternative communication. Future studies should focus on how early literacy experiences based on pictures and other visual cues can be modified for students with multiple disabilities.

- The relatively low number of students reported to use slate and stylus, portable electronic note-takers, and laptops, points to the need for additional resources for the acquisition of devices for writing and provision of appropriate instruction in written communication (See Tables 6 and 10).
- While only 10 Braille readers were reported as not receiving direct instruction (See Table 5), more than half of all SVI were reported to be receiving no direct instruction from certified VI personnel. This finding supports the need for regional services and increased support for preservice and graduate training in the area of VI.

Recommendations for Future Studies

Based on a careful review of the studies conducted in 1997 and in 1998, and recent findings, the SMSU research team offers the following recommendations for consideration by DESE:

1. The timeline for the study should begin in January of each year, providing researchers with sufficient time to collect necessary data based on recent APH registry. While the study may still be reported by December 1st of each year, the ability to use more recent core data from DESE and APH will significantly improve the ability of the researchers to contact programs and personnel serving SVI.
2. In addition to the large group data obtained through surveys, the SMSU researchers recommend a more field based approach to the assessment of Braille readers and the general levels of literacy. This approach could involve a sampling of students representing various geographic regions in the state to be included in Learning Media Assessments. Not only would this provide more authentic data on the literacy levels of students, but also these assessments could be tied to professional development opportunities for teachers serving these students in rural areas of the state.
3. DESE should examine the extent to which lack of appropriate alternative formats adversely affects the performance assessment of partially sighted and blind students in the Missouri Assessment Program. As was presented in Tables 11 through 14, partially sighted students are not performing in the MAP commensurate with the general population.
4. The MAP provides a means through which the performance of students with visual impairments compares with the general population of Missouri students. The data provided for the present study only pertained to students coded as partially

sighted. No data were available on students coded as blind and who use Braille. A more comprehensive treatment of the perspectives of educators toward this assessment process for students with visual impairments and the provision of MAP materials in Braille and other alternative media could generate important findings.

5. Future studies should also include the perspectives of graduates from Missouri's special education programs and students currently receiving services. These perspectives would provide valuable information on how well Missouri schools and agencies are preparing students for success in employment, the community, domestic life, and other post-secondary outcomes.
6. DESE should examine alternative research methods to obtain current information on the educational status of SVI served in private/parochial/home school settings.
7. SMSU researchers recommend continued use of the Blindness Literacy Survey developed by the Texas School for the Blind.
8. Future studies should employ a careful analysis of how assistive technology can be used to facilitate emergent, academic, and functional literacy.
9. Research has shown that reading aloud to children is the single best predictor for future success in reading. Studies must involve families of SVI as they clearly play an important role in the literacy development of their children.

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Appendix A

Telephone Interview Protocol

Telephone Protocol for Literacy Study

9/22/1999

Hello, my name is ---. I am calling on behalf of Dr. Chris Craig at SMSU who has been asked by DESE to conduct a literacy study of blind and visually impaired students in Missouri. This study is in compliance with SECTION 162.1136, RSMO. Do you have a few minutes to respond to my questions?

Ask questions:

How many students do you serve who are partially sighted (20/70 – 20/200 in the better eye with correction)? _____

How many of your students are classified as blind (20/200 or higher in the better eye with correction)? _____

In grades Pr-K _____

In grades K-3 _____

In grades 4-6 _____

In grades 7-12 _____

Ungraded _____

How many students that you serve attend private school settings? _____

How many students that you serve attend parochial school settings? _____

How many students that you serve attend home school settings? _____

How many of these students have an additional disability in the following areas:

learning disability _____

hearing impairment _____

autism _____

behavioral disorders _____

mental retardation _____

physically and other health impaired _____

speech or language impairment _____

traumatic brain injury _____

How many of your students with mental retardation require extensive or pervasive support (severe/profound classification) at school, home, and in the community?

In grades Pr-K _____

In grades K-3 _____

In grades 4-6 _____

In grades 7-12 _____

Ungraded _____

How many Braille readers?

In grades Pr-K _____

In grades K-3 _____

In grades 4-6 _____

In grades 7-12 _____

Ungraded _____

How many print greater than 18 point?

In grades Pr-K _____

In grades K-3 _____

In grades 4-6 _____

In grades 7-12 _____

Ungraded _____

How many students use regular print?

In grades Pr-K _____

In grades K-3 _____

In grades 4-6 _____

In grades 7-12 _____

Ungraded _____

How many students use audio cassette textbooks?

In grades Pr-K _____

In grades K-3 _____

In grades 4-6 _____

In grades 7-12 _____

Ungraded _____

How many students use slate and stylus?

In grades Pr-K _____

In grades K-3 _____

In grades 4-6 _____

In grades 7-12 _____

Ungraded _____

Would you say your students without additional disabilities are able to complete reading activities commensurate with their classroom peers?

Always _____ Sometimes_____ Seldom_____ Never_____

Would you say your preschool/early childhood students exhibit emergent literacy skills (orientation to books, letters have sounds, etc.)?

Always _____ Sometimes_____ Seldom_____ Never_____

Would you say your school-age students exhibit academic literacy skills (recognizes words, reading simple sentences, reads books written for young children)?

Always _____ Sometimes_____ Seldom_____ Never_____

Would you say your students without additional disabilities are able to answer grade level comprehension questions about a story read aloud or silently?

Always _____ Sometimes_____ Seldom_____ Never_____

Would you say your students without additional disabilities are able to maintain grade level performance in interpreting charts, graphs and maps in an appropriate medium?

Always _____ Sometimes_____ Seldom_____ Never_____

Would you say, in general, are your students without additional disabilities able to complete writing activities at a level commensurate with there classroom peers?

Always _____ Sometimes_____ Seldom_____ Never_____

In general, do your students receive daily literacy instruction from a certified teacher in the area of visual impairment? _____

Have all your students received an assistive technology assessment within the last three years? _____

Were the recommended materials provided for your students (slate and stylus, BrailleWriter, optical devices, computer based technology and software etc.)? _____

How many students use laptop computers or electronic note takers? _____

How many students have been referred to Division of Vocational Rehabilitation or Rehabilitation Services for the Blind? _____

How many students receive transition services from the Division of Vocational Rehabilitation or Rehabilitation Services for the Blind? _____

Could you arrange for an SMS researcher to interview with a student currently receiving services with a transition plan (ages 14 and older)? _____

You will be receiving X number of survey instruments within the next two days which ask for specific information for each of the students on your case load. We may call you again in a week to make sure you receive the instrument and to provide you with any additional

support in completing the survey. Do not hesitate to call Dr. Craig at (417) 836-6769 if you have any questions or concerns. Thanks,

Appendix B
Blindness Literacy Survey
BLINDNESS LITERACY STUDY SURVEY

Please circle or fill in the blank of the response that best describes the student. Please respond to all questions that apply to the student. Do not respond to any items not pertaining to the student. When you have completed this form, please place it in the self-addressed, postage-paid envelope (attached) and mail before October 15, 1999.

If you have any questions, please contact Dr. Chris Craig, Department Head of Reading, Special Education, and Instructional Technology at Southwest Missouri State University – (417) 836-6769.

I. STUDENT DATA

A. District:

B. Grade Placement:

C. Date of Birth:

D. Gender:

a. Female

b. Male

E. Degree of Visual Impairment

1. Functionally Blind:

a. Yes

b. No

2. Visual acuity in the better eye after correction:

a. Better than 20/70

b. 20/70 to 20/100

c. 20/100 to 20/200

d. 20/200 to 20/400

e. 20/400 or worse

f. Totally blind

3. Field loss in the better eye:

a. No field loss

b. Partial restriction

c. Severe restriction (20 degrees or less)

F. Additional Disabilities:

1. Does the student have an additional disability in the following areas?

Circle all that apply:

a. learning disability

b. hearing impairment

c. autism

d. behavioral disorder

e. mental retardation

f. physically and other health impaired

g. speech or language impairment

h. traumatic brain injury

2. If the student has mental retardation, does he/she require extensive or pervasive support (severe/profound classification) at school, home and in the community?

a. Yes

b. No

G. Receives VI Services:

1. Direct: The student receives direct VI services:

a. More than 5 hours per week

b. 3-5 hours per week

c. 1-3 hours per week

d. 1-2 hours per month

e. 2-4 hours per month

f. Less than 1 hour per month

g. Does not receive direct VI services

2. Consult: The student receives consultative VI services:

a. More than 5 hours per week

- b. 3-5 hours per week**
- c. 1-3 hours per week**
- d. 1-2 hours per month**
- e. 2-4 hours per month**
- f. Less than 1 hour per month**

g. Does not receive direct VI services

3. Team Participation: VI teacher plans programming with the following members of this student's educational team:

- a. O & M Yes No Not Appropriate**
- b. Diagnostician Yes No Not Appropriate**
- c. Classroom Teacher Yes No Not Appropriate**
- d. Parent/Guardian Yes No Not Appropriate**
- e. Paraprofessional Yes No Not Appropriate**
- f. OT Yes No Not Appropriate**
- g. PT Yes No Not Appropriate**
- h. Speech Yes No Not Appropriate**

H. Level of Inclusion: Circle only one, please.

- a. 85% - 100% of the student's day is spent in general education classes**
- b. 50% - 85% of the student's day is spent in general education classes**
- c. Less than 50% of the student's day is spent in general education classes**
- d. None of the student's day is spent in general education classes**

I. Assistive Technology:

- 1. Has the student had an Assistive Technology assessment, which included input from their educational team within the last three years?**

a. Yes

b. No

c. In Progress

2. Were materials such as slate and stylus, bookstand, computer adaptations or others recommended?

a. Yes

b. No

c. Not Appropriate

If yes, specify materials?

3. Were these materials provided for the student?

a. Yes

b. No

c. Not Appropriate

4. The student has adequate skills to utilize these devices?

a. Yes

b. No

c. Not Appropriate

J. Individual Transition Plans:

If the student is 14 years or older, have they had an Individualized Transition Plan?

a. Yes

b. No

c. Not Appropriate

II. ACADEMICS

A. Reading:

Instrument used for documentation:

The student:

1. Has completed reading readiness/reading inventory?

a. Yes

b. No

2. Accesses the following literacy media?

a. Regular print (typically 12-18 pt.) Yes No

b. Print greater than 18 pt. Yes No

c. Braille Yes No

3. Reads at _____ words per minute in their most efficient reading medium.

a. Less than 60

b. 61 - 70

c. 71 - 90

d. 91 - 120

e. 121 - 150

f. 151 - 200

g. More than 200

4. Is able to complete reading activities at a level commensurate with his/her classroom peers?

a. Yes

b. No

5. Based on the Present Level of Functioning in the current IEP, what grade level is the student functioning in reading?

6. Has emergent literacy skills (i.e., orientation to books, letters have sounds, etc.)?

a. Yes

b. No

7. Has academic literacy skills (i.e., recognizes words, reading simple sentences, reads books written for young children)?

a. Yes

b. No

8. Can answer grade level comprehension questions about a story read aloud?

a. Yes

b. No

9. Maintains grade level performance in interpreting charts, graphs, & maps?

a. Yes

b. No

10. Uses auditory sources (i.e., tape, screen reader, etc.) to efficiently access classroom assignments?

a. Yes

b. No

B. Writing:

Instrument used for documentation:

1. The student is able to complete writing activities at a level commensurate with his/her classroom peers?

a. Yes

b. No

2. The student uses:

a. Legible manuscript and/or cursive Yes No

b. Braille Yes No

c. Keyboarding and/or alternate input methods Yes No

3. The student writes his/her own signature

a. Yes

b. No

4. If in SEMI INDEPENDENCE, has demonstrated mastery of _____ of writing IEP objectives.

a. More than 90%

b. 80%

c. 70%

d. Below 70%

e. Not appropriate because this student is not in the SEMI-INDEPENDENCE category.

f. No appropriate because there is

no IEP in writing

Thank you for completing this form. Your help is very much appreciated.

**Please place into the self-addressed, stamped envelope and
mail before October 15, 1999.**

**Appendix C
Professional Profiles of Project Directors**

Dr. Chris Craig is an associate professor of education and department head of Reading, Special Education, and Instructional Technology at Southwest Missouri State University. Dr. Craig's program of research is in the area of emergent literacy for children and youth with disabilities. He completed his doctoral work in the area of visual impairment at George Peabody College for Teachers of Vanderbilt University. He has authored many publications dealing with special education, specifically in the area of visual impairment. Dr. Craig is Chair of the Missouri Assistive Technology Council and was recently appointed to the Advisory Board for the Journal of Visual Impairment and Blindness (JVIB). Dr. Craig serves as Director of the Missouri Equipment Technology Consortia. He is a member of the Council for Exceptional Children and The Association for the Education and Rehabilitation of the Blind and Visually Impaired. Dr. Craig is a frequent presenter at national conferences such as the Getting in Touch with Literacy and the AER International Conference.

David Hough, Ph.D. is a university administrator and Head of the Institute for School Improvement at Southwest Missouri State University. He is also a doctoral faculty member of the Graduate School of Education, University of Missouri, Columbia, and teaches courses in research and statistics. His doctoral work was completed in 1991 at the University of California where he specialized in policy analysis. Dr. Hough is editor for the National Middle School Association research journal *Research In Middle Level Education*, Columbus, Ohio. He has conducted numerous research studies related to middle school programs and student achievement, year-round education, school dropouts, integrated curricula, and teacher supply and demand. Dr. Hough also serves on the Board of Directors for the American Educational Research Association, Middle Level Education Special Interest Group. He is the author of a college text for middle level teaching and has published over 30 research studies and articles dealing with a variety of educational policy issues.

Email: Special Education
Phone: 573-751-5739 Fax: 573-526-4404
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